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EXAMINER	
PROCTOR, JASON SCOTT	

ART UNIT	PAPER NUMBER
2123	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/786,440	KROGER ET AL.	
	Examiner	Art Unit	
	Jason Proctor	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *46-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *46-68* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-45 have been cancelled and claims 46-68 were added by preliminary amendment dated August 5, 2002. Claims 46-68 were rejected by Office Action dated November 24, 2004. Claims 46-56 and 62-68 have been amended by response dated March 24, 2005. Claims 46-68 are pending in the application.

Claims 46-68 have been rejected.

Response to Objections to the Specification

The objections to the specification found in the previous Office Action stated that page 7 appears to begin by repeating half of the last paragraph from page 6 and that pages 30-35 appear to be duplicates of pages 26-29. These informalities have not been corrected by Applicants' amendments to the specification. These objections are maintained.

Response to Rejections under 35 U.S.C. § 101

The Examiner thanks Applicant for amending the claim language to limit the claimed inventions to "computerized methods" and as tangibly embodied on a computer readable medium. The previous rejections under 35 U.S.C. § 101 have been withdrawn.

Response to Rejections under 35 U.S.C. § 112

The Examiner thanks Applicant for amending the specification and claims regarding the operation of the XOR function. The related rejections under 35 U.S.C. § 112 have been withdrawn.

The Examiner thanks Applicant for amending claims regarding the language "in order to assist in the manufacture" and "assisting in the manufacture". The related rejections under 35 U.S.C. § 112 have been withdrawn.

The Examiner thanks Applicant for amending the language of claim 46 regarding the language "and/or" in the preamble. The related rejections under 35 U.S.C. § 112 have been withdrawn.

The amendments to the claims have appropriately resolved the rejections of claims 64 and 67 for lack of antecedent basis and the language "assisting in the manufacture" clarifies the meaning of "join the respective parts" in claim 64. The previous rejections of claim 64 under 35 U.S.C. § 112 have been withdrawn.

Response to Rejections under 35 U.S.C. § 103

Regarding the rejection of claims 46-65 under 35 U.S.C. § 103, Applicant argues for independent claims 46 and 62. To that end, Applicant argues primarily that:

> Ferriter simply discloses a hierarchical tree, and does not disclose a tree or net of positions where each position corresponds to an actual physical location in a manufactured product. Furthermore, Ferriter does not teach assigning at least one position variant to each position because Ferriter's variants do not correspond to the "variants" of claims 46 and 62. Ferriter's variants do not define the possible parts that can be placed in the corresponding positions. Instead of representing variations of possible options of parts, Ferriter's variants represent subcomponents of a component.

The Examiner respectfully traverses this argument as follows.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "a tree or net of positions where each position corresponds to an actual physical location in a manufactured product") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding the "variants" of claims 46 and 62, the Examiner respectfully draws Applicants' attention to MPEP 2111:

> During patent examination, the pending claims must be "given *>their< broadest reasonable interpretation consistent with the specification." > *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000).< Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969)

Applicants' arguments are directed toward the teachings of the Ferriter reference rather than the reasons why the Examiner's interpretation of the claim may have been improper. Applicant is arguing in favor of a narrower interpretation of the claim language in response to the teachings found in the prior art.

Specifically regarding the teachings of the Ferriter reference, the Examiner agrees that Ferriter teaches variants that represent subcomponents of a component. The specification of the instant application (page 11, third paragraph, emphasis added) teaches:

> It is possible, if desired, to group positions into sub-assemblies and sub-assemblies into assemblies in order to visualize how the various parts in a design fit together and to create assembly hierarchies.

The Examiner's interpretation of the claims is supported by the disclosure of the application. The references cited teach the invention as claimed. Applicants' arguments are in favor of an interpretation of the claims which is narrower than that disclosed. Applicants' arguments have been fully considered, but have been found unpersuasive.

Applicant further argues that:

> While the Examiner contended that in Cho at column 2, beginning at line 58 there was a suggestion that there was a disclosure of a "position" and "position variant", Applicant notes that Cho's citation of "a knowledge-based" system which specifies "the relationship between components" is an inadequate teaching and does not disclose the use of "position" and "position variant" as used in the present claims and as described in the specification in the third paragraph of the detailed description.

The Examiner respectfully traverses this argument as follows.

The thrust of Applicants' argument appears to be directed at the lack of teaching of a "position" and "position variant" in Cho. The Examiner respectfully draws Applicants' attention to the previous Office Action (page 6, emphasis added), which states:

> Regarding claim 46, Cho et al. teaches a method of representing an article of manufacture having a plurality of structural design variants (column 2, line 58 – column 3, line 16) and defining a plurality of links between pairs of components (column 4, lines 9-49).
>
> Cho et al. does not expressly disclose defining a plurality of positions corresponding to a different predefined location one the article of manufacture, nor assigning at least one position variant to each position identifying a specific part.
>
> Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13).

The Cho reference has not been relied upon to teach the "position" and "position variant" as implied by Applicants' arguments. The teachings of Ferriter as applied to the broadest reasonable interpretation of the claims has been discussed, *supra*. Applicants' arguments have been fully considered, but have been found unpersuasive.

Regarding claims 50 and 65, Applicant argues primarily that:

> Ferriter does not disclose "positions" as required by the present claims because Ferriter does not link the positions to physical locations in the article of manufacture. Instead, Ferriter simply discloses components of an article of manufacture. Combining the Cho and Ferriter references does not disclose the invention of claims 50 and 65 because the variants are not associated with a specific position corresponding to a physical location in the article of manufacture.

The Examiner respectfully traverses this argument as follows.

Claim 50 recites, *inter alia*, "each position variant definition being assigned to a particular position corresponding to a physical location in the article of manufacture." The Examiner presumes this is to what Applicant refers in arguing that "Ferriter does not link the positions to physical locations in the article of manufacture." However, Ferriter shows a lawnmower handle with an upper handle and a lower handle portion (Fig. 7). In the corresponding bill of materials display (Fig. 9), Ferriter clearly shows positions such as "slide strain relief" and "locking knobs (4)" assigned to the "upper handle assembly", while "nuts (2)" and "handle bracket washer" are assigned to the "lower handle assembly". Further, Ferriter teaches (column 6, lines 32-36):

> The first of these is shown in Fig. 7 which shows the product "LAWNMOWER" and a first major component "HANDLE" with tow [sic] of its subcomponents "UPPER HANDLE" and "LOWER HANDLE" displayed in a simple tree structure.

This subcomponent-component relationship of "UPPER HANDLE" and "LOWER HANDLE" to "HANDLE" constitute "a particular position corresponding to a physical location in the article of manufacture", specifically, the "LOWER HANDLE" subcomponent corresponds to the "HANDLE" location in the article of manufacture. In contrast, it would be inappropriate to interpret the relationship depicted in Fig. 7 as defining a relationship wherein, for example, "LOWER HANDLE" corresponds to the physical location occupied by the wheels or the engine, because Fig. 7 does not depict a relationship between "LOWER HANDLE" and the wheels or engine.

Applicants' arguments have been fully considered, but have been found unpersuasive.

Applicants' arguments for independent claim 56, Applicant refers to the arguments for claims 50 and 65, which have been found unpersuasive.

Applicants' arguments for the dependent claims refer to the arguments for the allowability of their respective base claims, all of which have been found unpersuasive.

The rejections under 35 U.S.C. § 103 of the previous Office Action are maintained.

Outstanding Objections and Rejections

Specification

1. The disclosure is objected to because of the following informalities: Page 7 appears to begin by repeating half of the last paragraph from page 6. Pages 30-35 appear to be duplicates of pages 26-29.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 46-48, 50-53, 56-59, and 62-65 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. US Patent No. 5,295,067 in view of Ferriter et al. US Patent No. 4,847,761.

Regarding claim 46, Cho et al. teaches a method of representing an article of manufacture having a plurality of structural design variants (column 2, line 58 – column 3, line 16) and defining a plurality of links between pairs of components (column 4, lines 9-49).

Cho et al. does not expressly disclose defining a plurality of positions corresponding to a different predefined location one the article of manufacture, nor assigning at least one position variant to each position identifying a specific part.

Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on the numerous options selected for a given product. The combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

Concerning the limitation of "providing a specific part associated with each selected position variant; and manufacturing the article of manufacture using the specific parts in the corresponding locations," applicant admits that it is known in the art to use a manufacturing

resource planning system in combination with traditional manufacturing technology (page 2, lines 1-11).

Regarding claim 47, neither Cho et al. nor Ferriter et al. expressly teaches assigning a connection variant to each link to specify a particular method of joining two parts. However, it would have been obvious to a person of ordinary skill in the art in combination with his own knowledge of the particular art to augment the meaning of the links in a tree structure to include data relating to the nature of the connection between the elements. By virtue of being a tree structure, the links between nodes establish that a relationship exists. It would have been obvious to assign meaning to those links, such as the method of joining the parts, since the presence of the link itself indicates that the parts are joined. Further, Cho et al. acknowledges that production engineering systems of prior art specify the relationships between components and seeks to improve upon this art (column 2, lines 58-65).

Regarding claim 48, Cho et al. teaches forming a code rule indicating whether the particular variants should be selected as well as evaluating the code rule to identify a specific part for use in a location (column 5, line 43 – column 6, line 9).

Regarding claim 50, Cho et al. teaches a method for determining manufacturing parts requirements for an article of manufacture having a plurality of structural design variants comprising analyzing an order, evaluating rules to determine features in accordance with the

rules, mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

Cho et al. does not expressly disclose assigning features to predetermined positions corresponding to a physical location in the article of manufacture, however Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on the numerous options selected for a given product. The combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

Regarding claim 51, Cho et al. teaches that the rule comprises at least one element corresponding to a selectable design option (column 4, lines 9-49) and teaches that the orders may be contained in an order matrix (column 7, lines 33-48; column 8, lines 28-33) described as a particular format that can be encoded and evaluated using batch processing. It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention in combination with his own knowledge of the particular art to use an order matrix to fulfill the

teachings of Cho et al. regarding a format that can be encoded and evaluated using batch processing.

Regarding claims 52 and 53, Cho et al. teaches evaluating rules by dividing the rule into its discrete rule elements, linking each element with order data for the corresponding element, and evaluating each rule in accordance with the with the order data linked to the discrete elements (column 4, lines 9-49; column 6, lines 1-42). These steps are well known in the art for evaluating a series of conditional and assignment statements in any number of well-known programming languages. For example, see Sebesta regarding Parse Trees and related topics, pages 113-123.

Regarding claim 56, Cho et al. teaches a method for determining manufacturing parts requirements for an article of manufacture having a plurality of structural design variants comprising analyzing an order, evaluating rules to determine features in accordance with the rules, mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

Cho et al. does not expressly disclose that the method is embodied on a system comprising a computer with a processor and memory, however does teach a knowledge based system (column 5, lines 35-42), the interpreted meaning of which includes a computer system, and makes reference to storing data in integer index terms (column 6, lines 23-45). Thus it would have been obvious to a person of ordinary skill in the art at the time of applicant's

invention that the method of Cho et al. could be directly implemented on a computer system with a processor and memory in order to use the method as intended.

Cho et al. does not expressly disclose assigning features to predetermined positions corresponding to a physical location in the article of manufacture, however Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on the numerous options selected for a given product. The combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

Cho et al. teaches producing an output indicating for each order the appropriate parts for use in the corresponding particular design variant of the article (column 3, lines 63 – column 4, line 8) referring to such output as a bill of materials.

Concerning the limitation of "the particular design variant defined by a specific order being manufactured using the parts indicated for that specific order," applicant admits that it is known in the art to use a manufacturing resource planning system in combination with traditional manufacturing technology (page 2, lines 1-11).

Regarding claim 57, Cho et al. teaches mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

Regarding claim 58, Cho et al. teaches that each code rule comprises at least one code rule element (column 4, lines 9-49), that each design option corresponds to a respective code rule element (column 4, lines 9-49), and that the orders may be contained in an order matrix (column 7, lines 33-48; column 8, lines 28-33) described as a particular format that can be encoded and evaluated using batch processing. It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention in combination with his own knowledge of the particular art to use an order matrix to fulfill the teachings of Cho et al. regarding a format that can be encoded and evaluated using batch processing.

Further, Cho et al. teaches linking the code rule elements with order data for the corresponding code rule element in the particular format (column 4, lines 9-49) as well as evaluating each code rule in accordance with the order data linked to the associated discrete code rule elements (column 4, lines 9-49).

Regarding claim 59, Cho et al. teaches evaluating rules by dividing the rule into its discrete rule elements, linking each element with order data for the corresponding element, and evaluating each rule in accordance with the with the order data linked to the discrete elements (column 4, lines 9-49; column 6, lines 1-42). These steps are well known in the art for

evaluating a series of conditional and assignment statements in any number of well-known programming languages. For example, see Sebesta regarding Parse Trees and related topics, pages 113-123.

Regarding claim 62, Cho et al. teaches a method of representing an article of manufacture having a plurality of structural design variants (column 2, line 58 – column 3, line 16) and defining a plurality of links between pairs of components (column 4, lines 9-49).

Cho et al. does not expressly disclose defining a plurality of positions corresponding to a different predefined location one the article of manufacture, nor assigning at least one position variant to each position identifying a specific part.

Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on the numerous options selected for a given product. The combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

The limitation of "assigning each position a unique position ID" would have been obvious to a person of ordinary skill in the art at the time of applicant's invention in combination with his own knowledge in the particular art in light of the well-known requirement of uniquely identifying memory locations for storing data on a computer system. Failure to grant each position a unique position ID at some level of implementation would eliminate the ability to address each position independently and call into question whether a plurality of positions that share a position ID are distinct or whether they refer to a single position.

Cho et al. teaches evaluating rules to determine features in accordance with the rules, mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

Cho et al. does not expressly disclose assigning features to predetermined positions corresponding to a physical location in the article of manufacture, however the combination with the invention of Ferriter et al. formed above would make this feature an obvious implementation detail of the combination.

Cho et al. teaches evaluating rules by dividing the rule into its discrete rule elements, linking each element with order data for the corresponding element, and evaluating each rule in accordance with the with the order data linked to the discrete elements (column 4, lines 9-49; column 6, lines 1-42). These steps are well known in the art for evaluating a series of conditional and assignment statements in any number of well-known programming languages. For example, see Sebesta regarding Parse Trees and related topics, pages 113-123.

Cho et al. does not expressly disclose that the method is stored as a computer program and is executed by the processor to manipulate stored data, however does teach a knowledge

based system (column 5, lines 35-42), the interpreted meaning of which includes a computer system, and makes reference to storing data in integer index terms (column 6, lines 23-45). Thus it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention that the method of Cho et al. could be directly implemented on a computer system as a stored program in order to use the method as intended.

Regarding claim 63, Cho et al. teaches defining a plurality of links between pairs of components (column 4, lines 9-49).

Cho et al. does not expressly disclose defining a plurality of positions corresponding to a different predefined location one the article of manufacture, however the combination with the invention of Ferriter et al. formed above would make this feature an obvious implementation detail of the combination.

Regarding claim 64, neither Cho et al. nor Ferriter et al. expressly teaches assigning a connection variant to each link to specify a particular method of joining two parts. However, it would have been obvious to a person of ordinary skill in the art in combination with his own knowledge of the particular art to augment the meaning of the links in a tree structure to include data relating to the nature of the connection between the elements. By virtue of being a tree structure, the links between nodes establish that a relationship exists. It would have been obvious to assign meaning to those links, such as the method of joining the parts, since the presence of the link itself indicates that the parts are joined. Further, Cho et al. acknowledges that production engineering systems of prior art specify the relationships between components

and seeks to improve upon this art (column 2, lines 58-65). When evaluating rules indicating which design variants are compatible, as disclosed by Cho et al. (column 4, lines 9-49), combined with the obvious advantage of assigning connection data to the links, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to include connection rules among the existing rules to enable the system to validate not only the design variants but also the connections between components.

Regarding claim 65, Cho et al. teaches a method for determining manufacturing parts requirements for an article of manufacture having a plurality of structural design variants comprising analyzing an order, evaluating rules to determine features in accordance with the rules, mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

Cho et al. does not expressly disclose assigning features to predetermined positions corresponding to a physical location in the article of manufacture, however Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on

the numerous options selected for a given product. The combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

Cho et al. does not expressly teach that the orders are contained in an order matrix, however does teach that the orders may be contained in a particular format that can be encoded and evaluated using batch processing (column 7, lines 33-48; column 8, lines 28-33). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention in combination with his own knowledge of the particular art to use an order matrix to fulfill the teachings of Cho et al. regarding a format that can be encoded and evaluated using batch processing.

Cho et al. does not expressly disclose that the method is stored as a computer program and is executed by the processor to manipulate stored data, however does teach a knowledge based system (column 5, lines 35-42), the interpreted meaning of which includes a computer system, and makes reference to storing data in integer index terms (column 6, lines 23-45). Thus it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention that the method of Cho et al. could be directly implemented on a computer system as a stored program in order to use the method as intended.

3. Claim 49 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. in view of Ferriter et al. as applied to claim 46 above, and further in view of Cornett et al. US Patent No. 5,216,612.

Regarding claim 49, neither Cho et al. nor Ferriter et al. expressly teaches assigning component documentation data to a predetermined set of position variants. Cornett et al. teaches storing a parts manual for a bill of materials for a machine (column 3, lines 7-33). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to combine the documentation such as a parts manual for a bill of materials as taught by Cornett et al. with the combined invention used to reject claim 46 above in order to unify the documentation requirements and manufacturing resource planning requirements. This combination could be achieved by including a reference in the position variant data to the relevant documentation data.

Cornett et al. also teaches defining assemblies (column 3, lines 7-33). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to combine the concept of assemblies as taught by Cornett et al. with the tree structure of Cho et al. in view of Ferriter et al. as both are hierarchical data structures that facilitate information encapsulation and assist the user in understanding the design. This combination could be achieved by constructing the tree structure taught by Ferriter et al. to correspond to an assembly structure.

Cho et al. teaches determining a particular variant defined by selected design options (column 5, line 43 – column 6, line 9).

Cornett et al. teaches aggregating and storing the documentation data by representing it as a hierarchical listing (column 3, lines 7-33).

4. Claims 54 and 55 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. in view of Ferriter et al. as applied to claim 51 above, and further in view of Zweben et al. US Patent No. 6,216,109.

Regarding claim 54, neither Cho et al. nor Ferriter et al. expressly teaches a position variant that has an associated validity period.

Zweben et al. teaches a resource planning tool (column 1, lines 15-25) wherein tasks have a valid time period constraint (column 14, lines 30-46). Although Zweben et al. is concerned with scheduling maintenance rather than allocating construction components, the notion of a valid time period as applicable to the inventions of Cho et al. and Ferriter et al. would be obvious to a person of ordinary skill in the art. Cho et al. expressly acknowledges that design changes occur and cause synchronization problems between databases (column 2, lines 34-65). Further, all three references are concerned with resource planning and allocation making the concept taught in one reference readily adaptable for use in combination with the others. In this case, the combination of a valid time period as taught by Zweben et al. could be achieved by including the a reference in the position variant data to the relevant valid time period data.

Regarding claim 55, Zweben et al. teaches that tasks are given temporal constraints which order them with respect to each other (column 14, lines 30-46). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to include temporal constraints as means of efficient time management when designing a manufacturing resource planning tool such as that of Cho et al. or Ferriter et al. The combination could be

achieved by including a reference in the position variant data to the temporal constraint, thus enabling the system to schedule the orders according to the valid time period data of the components on the bill of materials.

5. Claims 60 and 61 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. in view of Ferriter et al. as applied to claim 57 above, and further in view of Zweben et al.

Regarding claim 60, neither Cho et al. nor Ferriter et al. expressly teaches a position variant that has an associated validity period.

Zweben et al. teaches a resource planning tool (column 1, lines 15-25) wherein tasks have a valid time period constraint (column 14, lines 30-46). Although Zweben et al. is concerned with scheduling maintenance rather than allocating construction components, the notion of a valid time period as applicable to the inventions of Cho et al. and Ferriter et al. would be obvious to a person of ordinary skill in the art. Cho et al. expressly acknowledges that design changes occur and cause synchronization problems between databases (column 2, lines 34-65). Further, all three references are concerned with resource planning and allocation making the concept taught in one reference readily adaptable for use in combination with the others. In this case, the combination of a valid time period as taught by Zweben et al. could be achieved by including the a reference in the position variant data to the relevant valid time period data.

Regarding claim 61, Zweben et al. teaches that tasks are given temporal constraints which order them with respect to each other (column 14, lines 30-46). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to include temporal constraints as means of efficient time management when designing a manufacturing resource planning tool such as that of Cho et al. or Ferriter et al. The combination could be achieved by including a reference in the position variant data to the temporal constraint, thus enabling the system to schedule the orders according to the valid time period data of the components on the bill of materials.

46. Claims 66-68 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. in view of Ferriter et al. as applied to claim 65 above, and further in view of Zweben et al.

Regarding claim 66, neither Cho et al. nor Ferriter et al. expressly teaches a position variant that has an associated validity period.

Zweben et al. teaches a resource planning tool (column 1, lines 15-25) wherein tasks have a valid time period constraint (column 14, lines 30-46). Although Zweben et al. is concerned with scheduling maintenance rather than allocating construction components, the notion of a valid time period as applicable to the inventions of Cho et al. and Ferriter et al. would be obvious to a person of ordinary skill in the art. Cho et al. expressly acknowledges that design changes occur and cause synchronization problems between databases (column 2, lines 34-65). Further, all three references are concerned with resource planning and allocation making the concept taught in one reference readily adaptable for use in combination with the others. In this case, the

combination of a valid time period as taught by Zweben et al. could be achieved by including the a reference in the position variant data to the relevant valid time period data.

Regarding claim 67, Zweben et al. teaches that tasks are given temporal constraints which order them with respect to each other (column 14, lines 30-46). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to include temporal constraints as means of efficient time management when designing a manufacturing resource planning tool such as that of Cho et al. or Ferriter et al. The combination could be achieved by including a reference in the position variant data to the temporal constraint, thus enabling the system to schedule the orders according to the valid time period data of the components on the bill of materials.

Regarding claim 68, Zweben et al. teaches constructing revised schedules to correct constraint violations (Figure 5; column 17, line 53 – column 18, line 27). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to include this feature when combining the teachings of Zweben et al. with the combined invention of Cho et al. in view of Ferriter et al. as above in order to fully support the teachings of Zweben et al. and to realize the full potential of the temporal constraints. The combination could be achieved by repeating the mapping steps after the timing constraints have been resolved.

Conclusion

Art considered pertinent by the examiner but not applied has been cited on form PTO-892.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached at (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-3713.